is due to Reeve. I suppose we shall have to record the *O. aquatilis*, Reeve, as the *O. auricularia*, Lam., unless we should find a figure of this shell in some early work under another name.

The only shell remaining is the *O. auricularia*, D'Orb. Both Deshayes and Duclos are of opinion that D'Orbigny made some mistake: I am of quite the contrary way of thinking. We have the animal and shell given, the latter differing essentially from the *O. auricularia*, Lam.; and D'Orbigny might easily have thought it might belong to that variable species, as it was then supposed to be. I cannot think that such a naturalist as D'Orbigny would figure an animal and put an imaginary shell upon it; and therefore I conclude that the shell figured is the one dredged, and no other. Having arrived at this conclusion, and having carefully compared the shell figured with *O. biplicata*, Sow., there is no doubt in my mind of its being entirely new. In the first place, its open spire is sufficient to prevent its being mistaken for *O. auricularia*, and it differs from *O. biplicata* in not being biplicate but multiplicate, in not having the violet interior and basal band, and in having the basal band spotted —characters by which it may at once be distinguished from that species.

I think the species might be named after its discoverer, *O. Orbignyi*.

2 Peveril Terrace, Edge Lane, Liverpool.
July 17, 1868.

On a Viviparous Sea-Urchin. By Dr. E. Grube.

Our knowledge of the sexual conditions, reproduction, and development of the Sea-Urchins hitherto extended only to the fact that there are produced from the fecundated ova bilateral free-swimming larvæ furnished with lines of cilia (*Pluteus*), and that internal buds are formed in these, and become developed; in accordance with the 5-rayed type, with a spiny test and feet, into sea-urchins, which acquire male or female genitalia. The semen and ova issue through several small apertures situated at the summit of the test near the madrepore-plate.

The little Sea-Urchin upon which I have the honour to report to the Academy enlarges our knowledge of the natural history of the Echinoida by a very singular character: it produces living young, which are already sea-urchins, provided with test, spines, and feet, and so large that their diameter is more than one-tenth of the length of the parent animal, to which I give the name of *Anochanus*.

In its appearance *Anochanus* most closely resembles the *Nucleolites* (*Echinobrissus*) *epigonus* lately described by Dr. von Martens; it has an oval test, not broader behind, of 9·5 millims. in length, with a pit descending in the hinder interambulacrum, in which the anus opens, and a subventral peristome of elongate-oval form; but the feet run in uninterrupted rows from the peristome to the summit, which nearly occupies the middle. But the most peculiar circumstance is that we seek in vain for genital openings and a madrepore-

plate at the summit, which, however, contains an orifice of considerable size, concealed by overlying spines. This orifice does not lead into the cavity occupying the whole inner space of the test, but into a peculiar sac spread out beneath the dorsal arch, which does not seem to communicate with the general cavity, and in which the above-mentioned little sea-urchins lie; so that they can make their escape through the opening, which corresponds with them in diameter. The walls of this sac are formed by a membrane filled with a microscopic calcareous latticework; this is applied to the margins of the orifice, which are broadly turned inwards, and is thus suspended. Upon the inner surface of the sac small *Pedicellariæ* are seated, and upon the inner surface of the above-mentioned incurved margins small spines; upon the surface of the test, besides the spines, *Pedicellariæ* of larger dimensions occur; and the spines (which, however, do not appear to the eye to form rows) are of two kinds—namely, longer ones, which are not very sharp, and shorter ones spreading at the end into small teeth.

The internal space of the test, situated beneath the sac destined for the reception of the young, is chiefly occupied by the intestinal canal, which is attached to the wall, and commences with a very narrow œsophagus: on the anterior part of the wide portion, in which this is immersed, and which perhaps may be indicated as a stomach, a spot beset with minute paired cæca may be observed. A very fine and rather rigid canal, descending from the bottom of the brood-sac and probably continued to the region of the peristome, may perhaps be the sand-canal, and the spot from which it originates the madrepore-plate. But no trace of genitalia is to be seen, which is in accordance with the want of genital apertures. The germs of the young must be produced on the lower surface of the brood-sac; for here are suspended oval corpuscles about $\frac{3}{4}$ millim. in length, closely embraced by a saccule, which greatly resemble the youngest spineless embryos in the brood-cavity, whilst the most developed of the latter, as already stated, possess a test with feet and spines, and even with *Pedicellariæ*. Nevertheless these young animals do not present any complete agreement with the parent animal; their test is circular in its horizontal circumference, the peristome central, the larger spines distinctly stand in two longitudinal rows upon the interambulacra, and, above all, they want the apical orifice and the pit for the anus, although a spot free from spines may be observed upon the back of the test a little behind the middle.

According to this representation (which, indeed, is founded only upon the investigation of a single specimen) these germs, which are seated upon the calciferous walls of a sac opening outwards with a wide orifice, would have to be regarded as buds, and *Anochanus* as a young or larval state, like a *Pluteus*; but the young which it produces must await a sexual development.

However, it is permissible, and will facilitate future comparisons, to give the animal on which these investigations have been made a distinct name; and as, according to the statement of Salmin, the natural-history dealer, it was found in the Chinese Sea, it may be

provisionally cited as *Anochanus sinensis*.—*Monatsber. Berl. Akad. Wissensch.* March 12, 1868, pp. 178–180.

Note on the Anatomy of Pontobdella verrucata (*Leach*).

By L. Vaillant.

The number of rings in the zoonite in *Hirudo* and most of the allied genera is 5; in *Pontobdella* it is 4, as was recognized by Savigny. The body of *P. verrucata* contains 10 complete zoonites in its middle part, behind the cincture; the extremities and the cincture are less regularly formed, the rings being often grouped in threes. The total number of rings is 66. In the male zoonites (the six immediately following the cincture) the testes occupy the first ring, the nervous ganglion is placed between the third and fourth, and upon the last are the muciparous pores.

Beneath the skin and muscles the body presents a thick layer of yellowish-brown glandules, the excretory canals of which may be traced to the surface; they probably endue the animal with a protective coat. The muciparous vesicles of the cincture present a ciliated inner pavilion analogous to that indicated first in the Lumbricina, and afterwards in the *Branchiobdellæ*.

The trunk, by which these worms suck the blood which constitutes their food, is quite unarmed, so that it probably only penetrates by separating the tissues. The œsophagus is surrounded by whitish glandules, the excretory ducts of which are directed forward, towards the anterior disk. An analogous arrangement has been indicated in *Aulastoma* by Leydig, who supposes that these glands discharge themselves at the jaws to facilitate their action; the author thinks that they have probably to do with the formation of the oviferous cocoon. The so-called *stomach*, which the author would prefer to name *ingluvies* or *crop*, is a reservoir in which the blood accumulates without undergoing any perceptible change. It is divided anteriorly into seven chambers, indicated outside by slight constrictions, and separated by incomplete septa; behind is a large cæcum to which the intestine is applied longitudinally. The intestine has two lateral dilatations at its origin, and is divided into four nearly equal parts. The walls of the ingluvies are formed by interlaced fibres of laminar tissue and smooth muscular fibres, without distinct glandular elements; the walls of the intestine contain a multitude of true *glandular acini*. It is here that the process of digestion commences.

The female generative apparatus consists of a long sac or cæcum, the anterior neck-like part of which terminates at a whitish body of glandular aspect. From this starts a duct which unites with that of the opposite side, to open by a single median aperture. The glandular organ likewise receives from five to seven ducts on its inner surface; and these the author believes come from the transparent glands which occur at some parts, mixed with the yellowish subcutaneous glandules. This system would then have to be re-